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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,115	07/16/2003	Stephen G. Evangelides JR.	9005/19	9086

27774 7590 02/05/2007  
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EXAMINER
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LI, SHI K

ART UNIT	PAPER NUMBER
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2613

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/05/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

# Office Action Summary

Application No.

10/621,115

Applicant(s)

EVANGELIDES ET AL.

Examiner

Shi K. Li

Art Unit

2613

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 27 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-52 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-52 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application
- ☐ Other: \_\_\_\_\_

Art Unit: 2613

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 27 June 2006 has been entered.

### *Claim Rejections - 35 USC § 112*

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 1-52 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 1 recites the limitation "the optical transmission terminal including at least one transponder and other components necessary to communicate signals generated by said at least one transponder over a transmission line" in lines 9-11 of the claim. However, the specification, as originally filed, does not describe the limitation in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Art Unit: 2613

Claim 18 recites the limitation "including at least one transponder and other components necessary to communicate signals generated by said at least one transponder over a transmission line" in lines 5-6 of the claim. However, the specification, as originally filed, does not describe the limitation in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 35 recites the limitation "the optical transmission terminal including at least one transponder and other components necessary to communicate the signals generated by said at least one transponder over a transmission line" in lines 9-11 of the claim. However, the specification, as originally filed, does not describe the limitation in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 52 recites the limitation "wherein the second optical interfaces are differently configured interfaces" in lines 3-4 of the claim. Instant specification teaches on page 3, lines 2-3 "The second interface is configured to communicate in accordance with a first optical layer transport protocol." Instant specification, as originally filed, does not teach "wherein the second optical interfaces are differently configured interfaces" in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Art Unit: 2613

5. Claim 52 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 52 recites in lines 3-4 "wherein the second optical interfaces are differently configured interface" and in line 9 "a third interface communicating with the second interface". It is unclear whether there is one second interface or there are a plurality of second interfaces. If there are a plurality of second interfaces, there is insufficient antecedent basis for the limitation recited in line 9 of the claim.

Furthermore, claim 52 recites certain characteristics of the second optical interfaces and recites a third interface communicating with the second interface. Applicant suggests that the characteristics of the second optical interfaces differentiate the claimed invention from prior art. However, the claim fails to particularly pointing out and distinctly claiming the subject matter which is the optical transmission span instead of the second optical interfaces, or an apparatus that comprises the second optical interfaces.

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 3-4, 6-8, 11, 35, 37-38, 40-42 and 45 are rejected under 35 U.S.C. 102(e) as being anticipated by Li et al. (U.S. Patent 6,697,577 B1).

Art Unit: 2613

Regarding claims 1 and 35, Li et al. teaches in FIG. 7 an optical transmission system. FIG. 7 comprises optical transmitters 706, attenuators (signal processing unit) 724, WDM multiplexer 708, transmission path 704, optical amplifiers along the transmission path and test system including control modules 716 and 718. The transmitter 706 defines first optical interface for accepting incoming optical signal, and second optical interface for connecting to the attenuators. The attenuators and the WDM multiplexer define third interface for communicating with the second interface and fourth interface for coupling to the transmission path.

Regarding claims 3-4 and 37-38, Li et al. teaches in col. 1, lines 35-37 SONET and ATM industry-standard as the first interface.

Regarding claims 6 and 40, Li et al. teaches in FIG. 7 WDM as second optical layer protocol.

Regarding claims 7-8, 11, 41-42 and 45, Li et al. teaches in FIG. 7 optical gain equalization.

8. Claims 1-2, 5-8, 35-36, 39-42 and 45 are rejected under 35 U.S.C. 102(e) as being anticipated by Kasahara (U.S. Patent Application Pub. 2002/0131115 A1).

Regarding claims 1 and 35, Kasahara discloses in FIG. 1 an optical transmission system comprising a plurality of transmission/reception devices 21, 22, ..., 2N, a WDM multiplexer/demultiplexer 2a, optical amplifier 2b (signal processing unit), transmission path 3 and monitoring device (test system of instant claims) 5c. The transmission/reception devices define first optical interface to the transmission devices 11, 12, 1N, and second optical interface to WDM multiplexer/demultiplexer. The WDM multiplexer/demultiplexer and amplifier define third optical interface connecting to the second optical interface, and fourth optical interface to

Art Unit: 2613

the transmission path. The monitoring device 5c is coupled to optical amplifier 2b for monitoring optical signal quality.

Regarding claims 2 and 36, Kasahara teaches in FIG. 1 bi-directional interfaces.

Regarding claims 5 and 39, Kasahara teaches in paragraph [0018] that the transmission/reception devices interface with Gigabit Ethernet.

Regarding claims 6 and 40, Kasahara teaches in FIG. 1 WDM signal for transmission.

Regarding claims 7-8, 11, 41-42 and 45, Kasahara teaches in FIG. 1 an optical gain element (amplifier) 2b.

9. Claims 1-3, 5-8, 11-12, 14-16, 18-20, 22-25, 28, 30-31, 33-37, 39-42, 45-46, 49-50 and 52 are rejected under 35 U.S.C. 102(e) as being anticipated by Ikoma et al. (U.S. Patent 2002/0097460 A1).

Regarding claims 1, 18 and 35, Ikoma et al. teaches in FIG. 8 an optical transmission system comprising a transponder 1-1, optical signal strength adjuster (signal processing unit) 7-3, wavelength division multiplexer 7-6, wavelength division demultiplexer 7-7, optical amplifiers 7-4 and 7-5, transmission path and monitor system including test signal function in transponder, monitor control units 7-1 and operating system 7-13. The transponders define first interface for connecting to client I/O and second interface for connecting to optical signal strength adjuster. The optical signal strength adjuster, WDM multiplexer/demultiplexer and optical amplifiers define third interface for connecting to the transponders and fourth interface for coupling to the transmission path. The monitor system monitors optical signal quality.

Regarding claim 2, 19 and 36, Ikoma et al. teaches in FIG. 8 bi-directional interfaces.

Art Unit: 2613

Regarding claims 3, 5, 20, 22, 37 and 39, Ikoma et al. teaches in paragraph [0002] SONET/SDH and Gigabit Ethernet as client I/O.

Regarding claims 6, 23 and 40, Ikoma et al. teaches in FIG. 8 WDM.

Regarding claims 7-8, 11, 24-25, 28, 41-42 and 45, Ikoma et al. teaches in FIG. 8 optical gain element 7-4 and 7-5, and gain equalization element 7-3.

Regarding claims 12 and 46, Ikoma et al. teaches in FIG. 8 test signal generator within transponder and monitor system.

Regarding claims 14 and 30, Ikoma et al. teaches in FIG. 3 and paragraph [0028] to loop back signal for testing.

Regarding claims 15, 31 and 49, Ikoma et al. teaches in FIG. 3 pseudo-random test signal.

Regarding claims 16 and 50, Ikoma et al. teaches in FIG. 3 selector 2-2 for selectively monitor test signal or data signal.

Regarding claim 33, Ikoma et al. teaches in FIG. 3 to monitor bit error rate.

Regarding claim 34, Ikoma et al. teaches in FIG. 3 to use selector 2-2 for selecting data signal for monitoring.

Regarding claim 52, Ikoma et al. further teaches in FIG. 6 a ring network with a plurality of nodes where each node has functionality similar to terminal station node 5-1 of FIG. 8.

10. Claims 1-4, 18-21 and 35-38 are rejected under 35 U.S.C. 102(e) as being anticipated by Gerstel et al. (U.S. Patent Application Pub. 2004/0165888 A1).

Regarding claims 1, 18 and 35, Gerstel et al. discloses in FIG. 4 an optical transmission system comprising optical line terminal 1, optical line terminal 2 and network 70. Gerstel et al.



Art Unit: 2613

explains in FIG. 1 structure of optical line terminal, which comprises transponder 4 and multiplexer/demultiplexer 26. The transponder defines first optical interface for connecting to client equipment, and second interface for connecting to multiplexer/demultiplexer. The multiplexer/demultiplexer transforms optical signal from first optical layer protocol to second layer protocol. The multiplexer/demultiplexer directs optical data signal to network, which inherently includes transmission paths. FIG. 1 also includes test pattern injection circuits (TPIC) and monitoring circuit (MC).

Regarding claims 2, 19 and 36, Gerstel et al. teaches in FIG. 1 bi-directional interfaces.

Regarding claims 3-4, 20-21 and 37-38, Gerstel et al. teaches in claim 4 SONET and ATM as client signal.

### ***Claim Rejections - 35 USC § 103***

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 9-10 and 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Li et al. (U.S. Patent 6,697,577 B1) in view of Trischitta et al. (P. Trischitta et al., "Applying WDM Technology to Undersea Cable Networks", IEEE Communications Magazine, February 1998).

Li et al. has been discussed above in regard to claims 1, 3-4, 6-8, 11, 35, 37-38, 40-42 and 45. The difference between Li et al. and the claimed invention is that Li et al. does not teach an undersea optical transmission path. Trischitta et al. teaches to apply long-haul WDM transmission technology to undersea applications and discloses in FIG. 2 the Africa ONE project.

Art Unit: 2613

One of ordinary skill in the art would have been motivated to combine the teaching of Trischitta et al. with the optical transmission system of Li et al. to apply the transmission path of Li et al. for undersea applications because WDM allows undersea networks to use the wavelength layer to add and drop more traffic capacity at more landing points, while keeping the number of fiber pairs in the system to a minimum (see page 63, left col., last paragraph). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use WDM optical transmission network of Li et al. for undersea applications, as taught by Trischitta et al., because WDM allows undersea networks to use the wavelength layer to add and drop more traffic capacity at more landing points, while keeping the number of fiber pairs in the system to a minimum.

13. Claims 9-10, 26-27 and 43-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikoma et al. (U.S. Patent 2002/0097460 A1) in view of Trischitta et al. (P. Trischitta et al., "Applying WDM Technology to Undersea Cable Networks", IEEE Communication s Magazine, February 1998).

Ikoma et al. has been discussed above in regard to claims 1-3, 5-8, 11-12, 14-16, 18-20, 22-25, 28, 30-31, 33-37, 39-42, 45-46 and 49-50. The difference between Ikoma et al. and the claimed invention is that Ikoma et al. does not teach an undersea optical transmission path. Trischitta et al. teaches to apply long-haul WDM transmission technology to undersea applications and discloses in FIG. 2 the Africa ONE project. One of ordinary skill in the art would have been motivated to combine the teaching of Trischitta et al. with the optical transmission system of Ikoma et al. to apply the transmission path of Ikoma et al. for undersea applications because WDM allows undersea networks to use the wavelength layer to add and

Art Unit: 2613

drop more traffic capacity at more landing points, while keeping the number of fiber pairs in the system to a minimum (see page 63, left col., last paragraph). Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use WDM optical transmission network of Ikoma et al. for undersea applications, as taught by Trischitta et al., because WDM allows undersea networks to use the wavelength layer to add and drop more traffic capacity at more landing points, while keeping the number of fiber pairs in the system to a minimum.

14. Claims 13, 29 and 47-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikoma et al. (U.S. Patent 2002/0097460 A1) in view of Yu et al. (U.S. Patent Application Pub. 2003/0048508 A1)

Ikoma et al. has been discussed above in regard to claims 1-3, 5-8, 11-12, 14-16, 18-20, 22-25, 28, 30-31, 33-37, 39-42, 45-46 and 49-50. Ikoma et al. teaches in paragraph [0049] to send test data over unused optical channels. The difference between Ikoma et al. and the claimed invention is that Ikoma et al. does not teach to use dummy or spare channels for maintaining prescribed operation state of optical amplifier. Yu et al. teaches in paragraph [0002] to paragraph [0004] that it is desirable to keep input power to an optical amplifier constant so as to maintain saturation or other performance characteristics of an amplifier. One of ordinary skill in the art would have been motivated to combine the teaching of Yu et al. with the optical transmission system of Ikoma et al. so that spare channels are used for maintaining performance characteristics of an amplifier because this keeps the optical gain of an amplifier constant and avoids fluctuation in signal power for individual channels. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use spare channels for

Art Unit: 2613

maintaining performance characteristics of optical amplifiers, as taught by Yu et al., and send test signal over these channels in the optical transmission system of Ikoma et al. because this keeps the optical gain of an amplifier constant and avoids fluctuation in signal power for individual channels.

15. Claims 17, 32 and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ikoma et al. (U.S. Patent 2002/0097460 A1) in view of Ransford et al. (U.S. Patent 6,532,087 B1).

Ikoma et al. has been discussed above in regard to claims 1-3, 5-8, 11-12, 14-16, 18-20, 22-25, 28, 30-31, 33-37, 39-42, 45-46 and 49-50. The difference between Ikoma et al. and the claimed invention is that Ikoma et al. does not teach a Q-monitor. Ransford et al. teaches in col. 1, line 60-col. 2, line 11 relationship between BER and Q-factor. Ransford et al. teaches in FIG. 2 a Q-tester for determining Q-factor and in FIG. 3 to use the Q-tester for monitoring signal quality in transmission system. One of ordinary skill in the art would have been motivated to combine the teaching of Ransford et al. with the optical transmission system of Ikoma et al. to monitor signal with Q-tester because Q-tester can determine Q-factor in a short period of time while measuring BER takes a long time. Thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the Q-tester of Ransford et al for monitoring signal quality in the optical transmission system of Ikoma et al. because Q-tester can determine Q-factor, and therefore link performance, in a short period of time.

#### ***Response to Arguments***

16. Applicant's arguments filed 27 June 2006 have been fully considered but they are not persuasive.

The Applicant argues that none of the references, alone or in combination, show or suggest the very particular combination of interfaces and protocols recited in the claims as amended herein. However, the Applicant's argument is moot in view of the new subject matter issue of the added limitations.

Regarding claim 52, the Applicant argues that Ikoma fails to teach or suggest a plurality of different optical transmission terminals, each with first and second optical interfaces, the second optical interfaces being differently configured interfaces. However, claim 52 claims an optical transmission span that comprises a third interface and a fourth interface and does not include the second optical interfaces. Therefore, any characteristics and functionalities of the second interface would not affect the patentability of claim 52.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shi K. Li whose telephone number is 571 272-3031. The examiner can normally be reached on Monday-Friday (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 571 272-3022. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2613

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

skl

1 February 2007



**Shi K. Li**  
**Patent Examiner**